What is claimed is:

1. A transmitter chip comprising:

a first series of phase shifters to control the scan angle and linear polarization of an RF signal;

a 90° phase shifter to control the circular polarization of an RF signal; and

a means for controlling the first series of phase shifters and the 90° phase shifter.

2. The transmitter chip of claim 1, wherein the means comprises a serial-to-parallel converter.

3. The transmitter chip of claim 1, wherein the first series of phase shifters comprises a 5.625° phase shifter, an 11.25° phase shifter, a 22.5° phase shifter, a 45° phase shifter, and a 90 ° phase shifter.

4. The transmitter chip of claim 1, wherein the first series of phase shifters further comprises a 3-bit attenuator and three single stage amplifiers.

5. The transmitter chip of claim 1, wherein transistor-transistor logic (TTL) is used to control the polarization and scan angle of an RF signal.

6. The transmitter chip of claim 1, wherein the transmitter chip is capable of generating a signal with a polarization angle in the range of about 0° to 90°.

7. The transmitter chip of claim 1, wherein the transmitter chip is capable of generating a left-hand and right-hand circularly-polarized RF signal.

8. The transmitter chip of claim 1, wherein the transmitter chip is capable of generating a left-hand and right-hand circularly-polarized RF signal with very low axial ratios.

9. The transmitter chip of claim 1, wherein the transmitter chip is capable of generating scan angle in the range of about -45° to 45°.

10. The transmitter chip of claim 1, wherein the transmitter chip is using multifunctional self-aligned gate process (MSAG).

11. The transmitter chip of claim 1, wherein the transmitter chip is capable of providing higher RF yields.

12. An antenna comprising:

a first substrate containing a plurality of transmitter chips, wherein each transmitter chip is comprised of a first series of phase shifters to control the scan angle and linear polarization of an RF signal, a first 90° phase shifter to control the circular polarization of an RF signal, and a first means for controlling the first series of phase shifters and the first 90° phase shifter;

a second substrate containing a plurality of transmitter chips, connected at the output of the first substrate, wherein each transmitter chip is comprised of a second series of phase shifters to control the scan angle and linear polarization of an RF signal, a second 90° phase shifter to control the circular polarization of an RF signal, and a second means for controlling the second series of phase shifters and the second 90° phase shifter; and

a balun substrate connected at the output of the second substrate containing a number of baluns that divides an RF signal into two equal signals that are 180° out of phase with each other.

13. The antenna of claim 12 wherein the first substrate receives the first RF signal and the second substrate receives the second RF signal from an interconnect substrate.

14. The antenna of claim 12 wherein the antenna is capable of transmitting with a single operating signal.

15. The antenna of claim 12, wherein the balun substrate further comprises a number of radiator elements connected at the output of the baluns.

16. The antenna of claim 15, wherein each of the radiator elements are planar square patch radiator.

17. The antenna of claim 12, wherein each of the substrate is designed using MMIC technology.

18. The antenna of claim 12, wherein each of the substrate is built using LTCC technology.

19. The antenna of claim 12, wherein the various substrates are interconnected using a Fuzz-bottom interconnect.

20. The antenna of claim 12, wherein each of the substrate is connected to a aluminum-graphite frame that provides support and heat sinking mechanism for the substrates.

21. The antenna of claim 19, wherein various substrates are connected to the Fuzz-bottom interconnect using a film epoxy.

22. A transmitter chip comprising:

means for controlling the scan angle and the linear polarization of an RF signal; and

means for controlling the circular polarization of an RF signal.

23. The transmitter chip of claim 22, wherein the means for controlling the circular polarization of an RF signal can generate left-had circularly polarized signal and right-hand circularly polarized signal.

24. The transmitter chip of clam 23, wherein the means for controlling the circular polarization of an RF signal can generate left-had circularly polarized signal and right-hand circularly polarized signal with a very low axial ratio.